

## ABSTRACT

A system and method for mapping radio-frequency (RF) noise, and estimating channel quality in a multi-channel ultra-wideband communication system is provided. One method includes placing a plurality of time bins within a plurality of time frames and  
5 assigning a plurality of UWB communication channels comprising selected time bins. RF noise amplitude data is then sampled from selected time bins. The sampled RF noise amplitude data from the time bins is then averaged, thereby obtaining an average RF noise amplitude in each of the plurality of channels. The RF noise amplitude indicates the amount of RF noise present in a channel. The channels may then be ranked based on  
10 the characteristics of the RF noise.